DOCUMENT RESUME

ED 123 418 CE 007 156

TITLE Allied Health Field, Eighth Grade. Operation TACT [Toward an Allied Health Career Today] Field Test Curriculum 1973-1975 [and Teachers' Handbook].

INSTITUTION Connecticut Univ., Storrs. School of Allied Health Professions.

PUB DATE 73

NOTE 162p.; For the other curriculum guides, see CE 007 155-159; For the report of the project, see CE 007 160

EDRS PRICE MF-$0.83 HC-$8.69 Plus Postage.

DESCRIPTORS *Curriculum Guides; Educational Objectives; Grade 8; Health Needs; *Health Occupations Education; *Learning Activities; Medical Treatment; Mental Health; Pollution; Secondary Education; Study Guides; *Teaching Guides

IDENTIFIERS *Operation TACT; TACT; Toward an Allied Health Career Today

ABSTRACT

The two-part set consists of a student handbook and a related teachers' handbook in allied health education for use at the eighth grade level. The student handbook contains four units: (1) investigating health care needs, (2) mental health--study of different types of job roles and their related activities and skills, (3) treatment--diagnosis of health problems, and (4) pollution in our environment--study of relationships between pollution and health. Each unit provides learning activities and exercises for obtaining knowledge in different areas of the health field, particularly in the process of gathering, recording, analyzing, and diagnosing health needs data. The exercises provided in the student handbook are referred to in the teachers' handbook, which focuses on the same units in the student handbook and presents suggestions for learning processes and activities, notes, and resource materials. (EC)

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Allied Health Field

Eighth Grade

Operation TACT
Field Test Curriculum
1973-1975

CE007581

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INVESTIGATING HEALTH CARE NEEDS

ALLIED HEALTH FIELD:
1) *What are health care needs?*
2) *Who provides these needs?*
3) *Are there health care needs that are not being taken care of?*

This first unit is designed to help you investigate health care in the Hartford community. There are several ways to find the answers to the questions listed above.

One way is to observe the people around you and to ask them questions. A scientist would call this gathering DATA (Day-tuh). Data is information. An observer must learn to record data very precisely or exactly. In order to come to conclusions about your health care needs, you must ANALYZE (an-uh-lyz) or study carefully this data.

If this unit is successful, you will be able to:

1) *Name at least 5 important types of health care needs in your community.*
2) *Make careful observations; gather data.*
3) *Record data precisely.*
4) *Analyze the data and make generalizations.*
5) *List at least 4 agencies that service your health care needs.*
6) *Determine if there are health care needs in your community that are not being serviced and why they are not.*

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PICTURE SEQUENCE - HEALTH CARE NEEDS

Your teacher will show the class a series of pictures. Each picture shows a different health care need in your community.

1. LIST the health care needs you observed in the pictures.

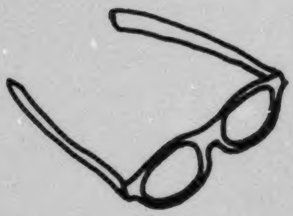
2. GROUP the items. Which two or three items would you put together in the same group?

Why are they related to each other?

Now group all of the items.

3. LABEL each group. Give each one a title or name that fits all of the groups' members.

Your teacher will now pass out the pictures. Divide into groups and write a caption for your group's photograph that might be put under the photo if it appeared in the newspaper.



Now your teacher will select several students to make labels giving the category names for the bulletin board display.

For extra credit, bring in some newspaper or other pictures and put them on the bulletin board under the proper category. You may also include the pictures in your notebook.

GATHERING, RECORDING AND ANALYZING DATA

ACTIVITY

Here is a simple activity that will help you learn how to gather, record and analyze DATA. Your teacher will ask 5 students to leave the room for one minute. After one minute, they will return.

Your task is to observe them closely and record below as precisely as you can, any observations that might tell you what may have happened in the hall way.

Student #1

Student #2

Student #3

Student #4

Student #5

On the basis of your recorded data, tell what you think happened in the hall way.

Now have your classmates tell you what they did in the hall way.

Were you right or wrong in your *conclusions**?*

You have just made some conclusions based on observation.

Are there more precise (exact) ways to gather data (information) than observation? Write in some suggestions below:

1)

2)

3)

4)

5)

The teacher will now select five other students to leave the class room for one minute. Your task when they return is to determine what happened in the hall way.

While they are out of the room, you may want to form teams to examine them when they return. Decide on the procedure you will use. (Remember your suggestions).

What procedure did you use?
What instruments?

Record your measurements:

Student #1

Student #2

Student #3

Student #4

Student #5

Student #6

Student #7

Student #8

Student #9

Student #10

On the basis of your recorded data, tell what you think happened in the hall way.

Were you right or wrong?

QUESTIONS:

1) What two methods of gathering data did we use?

a)

b)

Which is more precise? Why?

Now go on and complete the Mastery Sheet on the next page.

MASTERY SHEET #1

1) DATA is ____

____

____

2) The DATA I gathered in this activity is ________________

____

____

3) I think the difference between observation and measurement is that observation is ______________________________

____

and measurement is ___________________________________

____

4) Which is more precise, observation or measurement? Why? ______

____

____

5) To ANALYZE is to ___________________________________

____

____

6) Explain how you analyzed your data in this experiment. _______

____

____

____

____

____

MEDICAL HISTORY AND SCHOOL PHYSICAL EXAMINATION FORMS

Your teacher will give you some medical history forms to look over. Practice filling them in.

Notice all of the different kinds of information required, ranging from your height and weight to the types of diseases you have had.

MEASURING HEIGHT AND WEIGHT

1) Record your height and weight below:

Height ____________

Weight ____________

2) Record the height and weight of your partner below:

Height ____________

Weight ____________

Sex ____________

3) Using graph paper, plot a LINE GRAPH comparing height against weight for the boys.

Make another Line Graph showing height and weight of girls in the class.

You can get all this information from your teacher. He will gather all of the measurements from your classmates and will put them on the blackboard for you to use.

4) *What is the average height for boys?* ______________

Remember: To find an average, add all the figures together and divide by the number of boys.

Average weight for boys? ______________________

5) *What is the average height of girls in the class?* __

____________ *Average weight of girls?* ______________

6) *On the average, how many more pounds do the boys weigh than the girls?* _______________

How many inches shorter than the boys, on the average, are the girls? ______________________

MEASURING BLOOD PRESSURE AND RADIAL PULSE

A) Your teacher will demonstrate how to measure blood pressure.

#1 *What is blood pressure? Write your answer below in a full sentence, please.*

#2 Choose a partner. With your teacher's help:

a) Measure his/her blood pressure.

RECORD YOUR DATA

Name of Student	Blood Pressure

b) Now have him/her measure your blood pressure.

Record Your Data Below

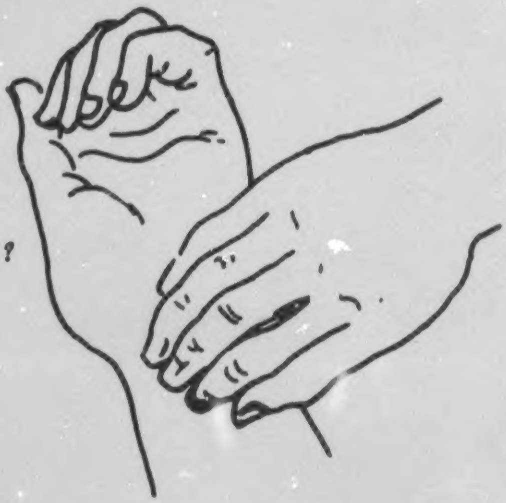
Name of Student	Blood Pressure

c) *What instrument did you use to measure blood pressure?* ______________________

B) You will also remember that medical examination forms also ask for pulse rate. There are two ways to measure pulse: One way is to listen to a person's heart beat and to count the number of beats per minute. The other way is to count the beats per minute in the Radial Artery, located in the wrist.

Your teacher will demonstrate the second way.

Now: a) Choose a partner. Measure his/her radial pulse rate. You will need a watch with a second hand or a stop watch.



Record Data Below

b) *What is your radial pulse rate?*

c) *Define pulse rate below.*

FAMILY DATA BANK

INTERVIEW SUMMARY

LIST and number all the specific health needs in your family.

GROUP the items in the above list into categories.

LABEL each category (give a name to each group).

CATEGORIZING

Discuss the different categories the members of your class used. That is, discuss the reason they put certain items together.

When we put things into categories, we group them for purposes of particular discussion. In categorizing, we put things that are alike together.

For example, if you were given the following items: (1) plum, (2) tiger, (3) pear, (4) grape, and were asked to cross out the item that does not belong in the category, you would cross out (2). Why? Because the purpose of this category is to group together fruits. There is a question which is understood when you see this list. That question is: Which of these items are fruits?

Why did you group your items together?

For each group you made, write below the question that is understood.

Look at the items in your family data bank. If you have not already done so, categorize them now in terms of what kind of medical treatment was required.

1) Emergency Treatment -

2) Preventative Treatment -

3) Rehabilitative Treatment -

4) Environmental Treatment -

5) Custodial Treatment (staying in a hospital or nursing home for a period of time).

6) Out-Patient Treatment -

INTERPRETING DATA

Select a student, to record on the blackboard, the names of the specific health ailments given by the class.

Which health ailment occurs most often?

Make a bar graph below showing the frequency of occurrence of the five most frequent ailments.

Now do a bar graph showing the frequency of the different categories of treatment.

What do these graphs show you about health care and needs in your community? Answer below in a full sentence, please.

What don't they show you? Answer below.

Write below some questions about health care and health care needs you would like to know the answers to.

VOCABULARY

health

data

precise

record

analyze

preventative

insurance

emergency

interpret

treatment

measurement

stethoscope

DIRECTIONS: Your teacher will give you some word puzzles and activities. Complete any 2 of them.

FILM

As you watch the film, try to answer the questions below:

1) *Do you see any areas of health needs that the class did not mention already? Add them to your list and categories.*

2) *What kinds of people do you see helping the hospital patients?*

What jobs do they have?

List four jobs and, in one or two sentences each, outline briefly what the person does. (Use the back of this paper if you need more room.)

3) *What kinds of skills did the people in the hospital use in helping the patients?*

How do people get the medical help they need?

You and the members of your family have all been to the doctor's office for a checkup or to the clinic emergency room.

1) *Based on your experiences, what do you think are the major problems with Hartford's health care system? (Hint: How long do you wait at the clinic before a doctor sees you?)*

List your answers below:

You have just taken a field trip to a neighborhood health care facility. Enter below three (3) things you learned during your visit:

1)

2)

3)

List below four (4) health care facilities that can be found in your community.

1)

2)

3)

4)

MASTERY SHEET

1) Name at least five (5) important health care needs in your community.

2) Name some problems that can be found in Hartford's health care system.

3) Data is ____

4) Analysis is ____

5) A category is ______________________________________

6) Name at least four (4) places you can go for health care in Hartford.

UNIT II

MENTAL HEALTH

MENTAL HEALTH

QUESTIONS: 1) *What is a role?*

2) *What are some different types of job roles?*

3) *How can you decide which job role appeals to you most?*

This unit will help you investigate different types of jobs and the kinds of activities and skills needed for each.

One way to do this is to observe people working and to record whether they work mostly with people, data or things. As you learned in Unit I, data (Da-tuh) is information. A person who works mostly with data will spend much of his time working with facts, figures, test results and other types of information. A job that deals primarily with people involves the skill of communicating with others. When we say a person works with things, we mean that his job is to operate machines and other types of equipment. Of course, some jobs involve working with all three. For example, a mechanic who works in a garage for someone else works primarily with machines (things). A mechanic who owns his own garage must also work with people and data. He must deal with customers and keep his books.

As you observe and record your job role information, remember to be precise (exact) so that you can analyze or study it carefully.

If this unit is successful, you will be able to:

1) Define work role;

2) Define student role;

3) Create, take part in and analyze role-playing situations;

4) Identify different types of job roles;

5) Identify job roles that most appeal to you;

6) Discuss how being happy with your job affects your positive self image.

UNIT VOCABULARY WORDS

1. role
2. job
3. occupation
4. people
5. data
6. things
7. observe
8. record
9. analyze

IDENTIFYING ROLES

You are going to try an experiment in observation. The purpose of this experiment is to see how much you can find out about a person's job role by observing his or her hands.

1. Below are five (5) photographs. Look at each very carefully and then write below, in one or two sentences each, what the hands in the picture tell you about the person's job.

2. Now see how much you can find about the job roles of the members of your family by observing their hands over a period of time.

What activities do your mother's hands perform during the day? List them below:

How do these activities place her in a certain job role? What kind of job role?

On a rating scale of 1 - 10 (1 is the lowest), how would you rate your mother in terms of contact with people, data and things?

PEOPLE	1 2 3 4 5 6 7 8 9 10
DATA	1 2 3 4 5 6 7 8 9 10
THINGS	1 2 3 4 5 6 7 8 9 10

If all three together add up to 100%, what percent of your mother's time is spent in contact with people?

with data?

with things?

Figure Space:

IDENTIFYING ROLES

These exercises will give you practice in identifying the roles a person performs and in describing whether these roles emphasize people, data or things.

1. Your teacher will show the class a short cartoon. Watch it carefully and then answer the two questions below:

   a) *What role did the major character play?*

   b) *Was the main character concerned more with people, data or things?*

Rate him:		
	PEOPLE	1 2 3 4 5 6 7 8 9 10
	DATA	1 2 3 4 5 6 7 8 9 10
	THINGS	1 2 3 4 5 6 7 8 9 10

2. You will now listen to tapes of two (2) short job descriptions. Notice that the name of the job has been left out. Try to guess, based on the role described, what job each ad is for.

   1.

   2.

3. **Hospital People:**

For the last activity in this area, you will be given a short selection to read. Read it carefully and then fill out the rating scale below:

Job: ______________________________

Some things done on the job:
1.
2.
3.
4.
5.

PEOPLE 1 2 3 4 5 6 7 8 9 10
DATA 1 2 3 4 5 6 7 8 9 10
THINGS 1 2 3 4 5 6 7 8 9 10

One way people find out about jobs and job roles is by reading newspaper and magazine ads.

1. Write two (2) short want ads for the HARTFORD COURANT that outline different occupational or job roles.

2. Create a poster showing one of the job roles listed below:
   - a. military man
   - b. housewife
   - c. student
   - d. musician
   - e. nurse
   - f. ______________________

WHAT ROLES AM I EXPECTED TO PLAY?

1. List below three (3) people who make demands on you and/or whom you wish to please. Under each person's name (use fictional names if you wish) list as many specific things as possible that they wish you to do. For example, a friend may be telling you to drink; your mother might not want you to drink.

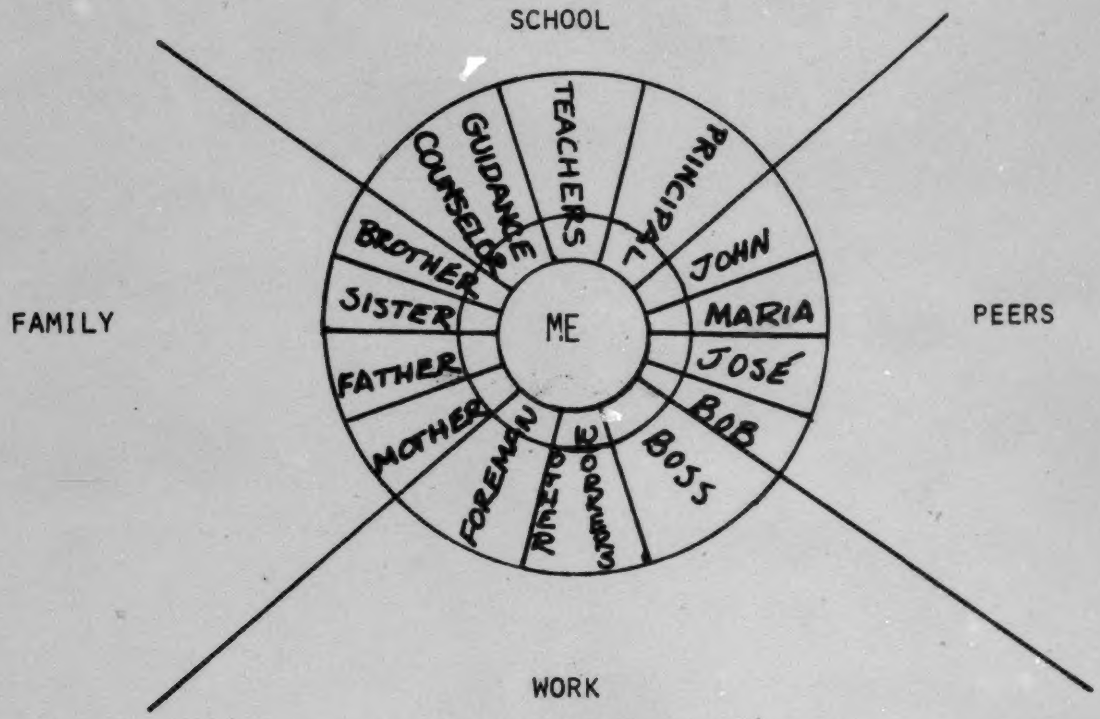
   1.

   2.

   3.

Now go back through the list of items. Circle any demands or pressures that conflict and draw connecting lines between them.

These kinds of conflicts can be diagrammed with the use of a __role__ __model__ __wheel__ like the one below:


SCHOOL
TEACHERS
PRINCIPAL
GUIDANCE
COUNSELOR
JOHN
BROTHER
SISTER
FAMILY
ME
MARIA
PEERS
FATHER
JOSÉ
MOTHER
BOB
FOREMAN
OTHER
WORKERS
BOSS
WORK

Now make your own role model wheel below using some of the conflicts on your list:

One important role you are expected to play at this time is the role of a student.

1. What kinds of pressures or demands are placed on you in your role as a student? List some:

2. Which of these pressures try to make you aware of people? Put a * next to those. Which of these pressures try to make you aware of data? Put a + next to them. Put a ♡ next to the demands that try to make you aware of things.

Look at your data sheet. How many of the items you listed have a * and a + and a ♡ next to them?

ROLE-PLAYING SITUATIONS

Your teacher will now help your class prepare to role-play some of the student role situations you have mentioned on page 10.

When you role play, you act out a situation. You can act out many different endings to the same story. If you don't like the way other students in your class act out an ending, you may want to act out the situation in a different way. Remember, there is no "correct" way to end the story.

For each role play you observe, be sure to fill out the observation data sheet on the next pages.

After the role plays, you will have the chance to talk about each situation.

ROLE PLAYING OBSERVATION DATA SHEET

1. *Define as precisely as you can the problem being presented.*

2. *How did each person handle the problem? Describe as precisely as possible.*

3. *Suggest better and/or other ways each person could have dealt with the problem.*

4. *What decision was made in dealing with the problem?*

5. *Was this a fair decision? How was the decision made? What decision would you have made? Suggest a decision for each character involved.*

Share your individual responses to the role-playing situations. Your class may wish to role play the situation again using some of the suggestions from the class discussion.

ROLE PLAYING OBSERVATION DATA SHEET

1. *Define as precisely as you can the problem being presented.*

2. *How did each person handle the problem? Describe as precisely as possible.*

3. *Suggest better and/or other ways each person could have dealt with the problem.*

4. *What decision was made in dealing with the problem?*

5. *How was this decision made? Do you think it was a fair decision? What decision would you have made? Suggest a decision for each character involved.*

Share your individual responses to the role-playing situation.

ROLES AND THE ENVIRONMENT

On the next few pages is a selection from Richard Wright's autobiography Black Boy. At the time of this incident, Richard is six (6) years old and lives in Memphis. The year is 1914.

One evening my mother told me that thereafter I would have to do the shopping for food. She took me to the corner store to show me the way. I was proud; I felt like a grown-up. The next afternoon I looped the basket over my arm and went down the pavement toward the store. When I reached the corner, a gang of boys grabbed me, knocked me down, snatched the basket, took the money, and sent me running home in panic. That evening I told my mother what had happened, but she made no comment; she sat down at once, wrote another note, gave me more money, and sent me out to the grocery store again. I crept down the steps and saw the same gang of boys playing down the street. I ran back into the house.

"What's the matter?" my mother asked.

"It's those same boys," I said. "They'll beat me."

"You've got to get over that," she said. "Now, go on."

"I'm scared," I said.

"Go on and don't pay any attention to them," she said.

I went out of the door and walked briskly down the sidewalk, praying that the gang would not molest me. But when I came abreast of them, someone shouted.

"There he is!"

They came toward me, and I broke into a wild run toward home. They overtook me and flung me to the pavement. I yelled, pleaded, kicked, but they wrenched the money out of my hand. They yanked me to my feet, gave me a few slaps, and sent me home sobbing. My mother met me at the door.

"They b-beat m-me," I gasped. "They t-took the m-money."

I started up the steps, seeking shelter in the house.

"Don't you come in here," my mother warned me.

I froze in my tracks and stared at her.

"But they're coming after me," I said.

"You just stay right where you are," she said in a deadly tone. "I'm going to teach you this night to stand and fight for yourself."

She went into the house and I waited, terrified, wondering what she was about. Presently she returned with more money and another note and also a long heavy stick.

"Take this money, this note, and this stick," she said. "Go to the store and buy those groceries. If those boys bother you, then fight."

I was baffled. My mother telling me to fight, a thing she had never done before.

"But I'm scared," I said.

"Don't you come into this house until you've gotten those groceries," she said.

"They'll beat me; they'll beat me," I said.

"Then stay in the streets; don't come back here!"

I ran up the steps and tried to force my way past her into the house. A stinging slap came on my jaw. I stood on the sidewalk, crying.

"Please, let me wait until tomorrow," I begged.

"No," she said. "Go now! If you come back into this house without those groceries, I'll whip you!"

She slammed the door, and I heard the key turn in the lock. I shook with fright. I was alone upon the dark, hostile streets and gangs were after me. I had the choice of being beaten at home or away from home. I clutched the stick, crying, trying to reason. If I were beaten at home, there was absolutely nothing that I could do about it; but if I were beaten in the streets, I had a chance to fight and defend myself. I walked slowly down the sidewalk, coming closer to the gang of boys, holding the stick tightly. I was so full of fear that I could scarcely breathe. I was almost upon them now.

"There he is again!" the cry went up.

They surrounded me quickly and began to grab for my hand.

"I'll kill you!" I threatened.

They closed in. In blind fear, I let the stick fly, feeling it crack against a boy's skull. I swung again, lamming another blow, then another. Realizing that they would retaliate if I let up for a second, I fought to lay them low, to knock them cold, to kill them so that they could not strike back at me. I flayed with tears in my eyes, teeth clenched, stark fear making me throw every ounce of my strength behind each blow. I hit again and again, dropping the money and the grocery list. The boys scattered, yelling, nursing their heads, staring at me in utter disbelief. They had never seen such frenzy. I stood panting, egging them on, taunting them to come on and fight. When they refused, I ran after them, and they tore out for their homes, screaming. The parents of the boys rushed into the streets and threatened me, and for the first time in my life I shouted at grown-ups, telling them that I would give them the same if they bothered me. I finally found my grocery list and the money and went to the store. On my way back I kept my stick poised for instant use; but there was not a single boy in sight. That night I won the right to the street of Memphis.

To prepare for discussion of this selection from Black Boy, write out answers to the following questions:

1. *Explain why you approve or disapprove of the actions of Richard's mother.*

2. *What alternative choices does Richard's mother have? What do you think would happen if those alternative choices were taken?*

3. *Describe a different environment where Richard's mother might act differently.*

   Environment:

   Mother's action:

4. *Do you think that Richard Wright, in looking back on his life in this book, approves or disapproves of his mother's action? Why?*

5. *What role did Richard's mother feel he had to play? Why?*

6. *If you have lived in different neighborhoods, areas of the state, or areas of the country, do you think different roles would be expected of you? If so, explain.*

WHAT ROLES DO I LIKE BEST?

A DAY IN THE LIFE OF ______________________

Tomorrow you will keep a record of your whole day using a time chart like the one on the following page. One purpose for this activity is for you to analyze the things you like to do best. We can talk about analyzing a day in terms of three kinds of activities. Those activities where we are primarily dealing with other people, we will label PEOPLE. Those activities where we are working with figures, experimenting and making measurements, we will label DATA. When we are working most of the time with machines and equipment, we can label it THINGS. Of course, many jobs involve all three.

Look at the time chart:

In the column labeled "interest scale" rate the activity in terms of your enjoyment and interest. If the activity was very interesting and enjoyable, give it a rating of 5. If you were bored and disliked the activity, give it a rating of 1. A rating of 3 would indicate that you could "take it or leave it."

After you have filled out the time chart, make an analysis of your results:

1. *Which part of your day did you like best? Why?*
2. *What part of your day was spent with people?*
3. *What part of your day was spent with data?*
4. *What part of your day was spent with things?*
5. *If your whole day adds up to 100%, what percent was spent with people? with data? with things?*
   Make a pie or circle graph showing your results.

6. *Build an imaginary time chart describing your ideal day.*

TIME	ACTIVITY	CONTACT PEOPLE	MY ROLE	KIND OF ACTIVITY P D T	INTEREST SCALE
Sample:					
9 - 10 A.M.	Math Class	Classmates, teacher	Student	Data	4

PREPARING TO MAKE AN INTERVIEW FORM

This week some people working in health professions will be visiting the class. They will be describing the kind of work they do. You have already begun to think about some of the things you like to do. As a class you will develop an interview form in order to prepare questions for the visitors. What are the questions you would like them to answer if you were looking for a job? Think back on your own analysis of your time chart and write below any questions you would like to have included in an interview form.

After each interview, fill out a Job Role Chart.

GUEST SPEAKERS-JOB ROLE CHART

1. Speaker ______________________________

Job ______________________________

Duties ______________________________

____

____

Works with: Rate

PEOPLE	1	2	3	4	5	6	7	8	9	10
DATA	1	2	3	4	5	6	7	8	9	10
THINGS	1	2	3	4	5	6	7	8	9	10

Note Space:

GUEST SPEAKER-JOB ROLE CHART

2. Speaker ____________________

Job ____________________

Duties ____________________

____

____

Works with: Rate

PEOPLE	1	2	3	4	5	6	7	8	9	10
DATA	1	2	3	4	5	6	7	8	9	10
THINGS	1	2	3	4	5	6	7	8	9	10

Note Space:

GUEST SPEAKER-JOB ROLE CHART

3. Speaker ____________________

Job ____________________

Duties ____________________

____

____

Works with: Rate

PEOPLE	1	2	3	4	5	6	7	8	9	10
DATA	1	2	3	4	5	6	7	8	9	10
THINGS	1	2	3	4	5	6	7	8	9	10

Note Space:

OPTIONAL ACTIVITIES - GUEST SPEAKERS - PEOPLE, DATA, THINGS

A. One of the guest speakers you heard was a licensed practical nurse. She (he) is in contact with PEOPLE a great deal of her (his) working time. Try to imagine you are an LPN. Put yourself in this role. Record in your daily log a conversation you had with a patient about her (his) prescribed medicine.

B. The Laboratory Technician does routine laboratory tests and is responsible for the care and maintenance of all lab equipment. Today, in your science class you are going to assume the role of a laboratory technician. Try one of the activities below:

a) Dr. Fernandez requests you to do a blood typing of Patient X so that he can be given necessary blood transfusions. Your teacher will supervise your work. Remember, as a lab technician you must also clean the equipment after you have completed your investigation.

b) A series of blood cell slides are set up on the microscope.

1) Look carefully at each;
2) Draw each slide as you see it;
3) Label each drawing;
4) Look at the diagram of blood cells your teacher will give you;
5) Try to identify each blood cell slide you observed.

JOB ROLE - SELF-ASSESSMENT

The objective of this self-assessment exercise is to help you come to some conclusions about which jobs you would like best. People have a sense of worth and well-being on their jobs if they can do the work well, and if they enjoy the roles that their jobs require.

The chart on the next page will help you begin to think about what jobs are most likely to offer you a sense of well-being. If you are unsure of the job description or the skills required, ask your guidance counselor. Work on this chart with your counselor. She can give you a lot of information and insight.

You may want to enter jobs and job descriptions on this chart throughout the semester.

JOBS I PREFER	JOB DESCRIPTION	DESCRIPTION OR ROLES REQUIRED - P D T	ROLES I CAN PERFORM	ROLES I AM WILLING TO LEARN	SKILLS REQUIRED	SKILLS I NOW HAVE FOR THIS JOB	SKILLS I AM WILLING TO ACQUIRE
EXAMPLE:							

Show this chart to your guidance counselor at your next meeting. Ask her about other jobs you would like to know about based on your self assessment.

OPTIONAL CONCLUDING ACTIVITY - ROLES AND WELL BEING

You have made a self assessment about the kind of job you would like to have. Some people never really get around to assessing themselves and find themselves confused, lost and unhappy. You are going to view a film called Death of A Salesman. It is based on a play by Arthur Miller. As you watch this film, think about the characters in terms of their own sense of well-being. What makes them feel the way they feel?

Questions for Discussion:

1. *What does Biff mean when he says: "I've always made a point of not wasting my life, and every time I come back here I know that all I've done is to waste my life."*

2. *Do you feel that people in this play really know themselves? Discuss some characters.*

3. *Discuss Biff's relationship with his father. Is there a conflict? What is it? How can it be resolved?*

4. *What do you think Happy's chances are for success in terms of how he defines success?*

MASTERY SHEET

1. A role is ____

2. Role playing is ____________________________________

____

3. Describe how a job is important to a person's sense of well-being.

4. One way to investigate different jobs is to look at them in terms of three things:

   1. ______________________
   2. ______________________
   3. ______________________

5. Describe what you think Mental Health is.

6. How can environment affect the roles a person plays?

7. Identify some jobs that might appeal to you and explain why they do.

UNIT III

TREATMENT

In units one and two you began gathering, recording and analyzing data. You probably remember that data is information. Once you collect data, you record it or write it down so that you can study or analyze it very carefully. When health workers diagnose or identify a disease or health problem, they must first gather, record and analyze data.

A health worker uses many different skills to diagnose a patient's problem. His records include many skills and must be very accurate. He (or she) may put his patient's life in danger if he does not use his skills to measure and record his patient's condition exactly.

If this unit is successful:

1. You will be able to define: diagnosis
   treatment
   data
   analyze
   infer
   record

2. You will be able to demonstrate skill in three of the following areas:

   a) Blood typing
   b) testing for sugar in saliva or urine
   c) testing for color blindness
   d) taking body temperature
   e) measuring height and weight
   f) measuring calories
   g) growing and analyzing germ cultures
   h) measuring breathing--How much air can you breathe in?
   i) planning a well-balanced meal
   j) recording heart beat

3. You will be able to use a Snellan or other eye chart to test vision and will be able to collect, record and analyze the data gathered.

4. You will be able to make accurate observations and then make justifiable inferences from your observations.

VOCABULARY

The following words are used in this unit. It is important that you become familiar with them.

treatment
diagnosis
inference
data
analyze
precise
saliva
calorie
depth perception
observation
germ
culture

TREATMENT - WHY IS IT IMPORTANT?

Today your class will brainstorm the following question:

How would your life be different if everything you saw was blurred and you didn't have glasses?

Remember, when you brainstorm there are no right or wrong answers so we do not criticize each other's answers.

A. LIST your answers below:

B. GROUP the items into categories

C. LABEL each category (give it a name)

ACTIVITY

Your teacher will show the class some slides and photographs. The images on these slides and pictures have been blurred so that you can understand what it would be like to have poor vision and no glasses.

a) After you observe each blurred photo, try to say what you think it is about. Then, when the photograph is brought into focus, see if you guessed correctly.

b) How did you feel when you had difficulty identifying what was happening in the picture?

c) What do you think could be done for a person with blurred vision? What kind of treatment could a health worker give?

ASSIGNMENT

Find 3 or 4 pictures or drawings of people with possible health problems. For each, first tell what the problem is. Then discuss why treatment of the condition would be important to the person's health and well-being.

OPTIONAL: Suggest possible kinds of treatment that might be used to correct each health problem.

FACT SHEET - DIAGNOSING A HEALTH PROBLEM

A doctor may advise a person with poor vision to wear glasses.

But how does the doctor know exactly what is wrong with his patient's eyes so that he can prescribe proper treatment?

To find out what is wrong the doctor must give his patient many different eye tests. These tests and the doctor's measurements must be 100% accurate. If they are not, the doctor may think something is wrong that really isn't wrong. Then he may not take care of the real medical problem. The doctor must use his skills to collect exact or precise data.

After the doctor gathers data from the eye tests, he must record it. Once all of the data is recorded, the doctor can begin to analyze the test results to find out exactly what his patient's problem is.

GATHERING AND RECORDING DATA

THE EYE TEST

Today you will investigate one way doctors, nurses, and other health workers check vision with eye charts. You have probably taken many eye tests where you had to stand 20 feet away from the chart, cover one eye gently and read letters from the eye chart with your other eye. The letters are large at the top and get smaller and smaller as they near the bottom of the chart.

Your teacher or school nurse will demonstrate the use of the Snellan Eye Chart.

1. Choose a partner

   a) Measure his/her vision with the Snellan Chart.
   Record your Data.

Name of Student Vision

   b) Ask your partner to measure your vision.
   Record your Data.

Name of Student Vision

*Be sure you are standing the proper distance away from the chart. If you are not, your results will not be correct or accurate.

ANALYZING THE DATA

THE EYE TEST

Your teacher will gather all of the vision test results from your classmates and will give them to you.

1) *Using graph paper, plot a LINE GRAPH comparing vision results for girls against vision results for boys.*

2) *What is the average left eye vision for boys? Remember: to find an average, add all the figures together and divide by the number of boys.*

Average left eye vision - boys ________________________

3) *What is the left eye vision for girls?*

____

4) *Generally, according to your* *data**, who has better vision in your class - boys or girls?*

OPTIONAL ASSIGNMENT

Do you think a person's vision gets better or worse with age?

Support your answer by recording below a description of the vision of at least six (6) adults. Be sure to use the data you collected from your class test results also.

THE IMPORTANCE OF PRECISION

Your class has just completed several activities involving charts and vision examinations. The Eye Charts you used were most likely manufactured by large optical companies in the United States. The measurements between the lines, the size of the letters and distance between the letters are standard. When your vision is tested, these exact or precise chart measurements are very important.

To understand the importance of precision in health care, you are going to make and use your own Eye Chart. Decide on the letters and the Chart format. Then, "create" your chart using the necessary supplies. When your Eye Chart is completed, prepare to test it on some of your classmates.

A. Name of Student Patient______________________________

Vision results using "standard" chart____________________

Vision results using "homemade" chart____________________

Do the results agree?

B. Name of Student Patient______________________________

Vision results using "standard" chart____________________

Vision results using "homemade" chart____________________

Do the results agree?

C. Name of Student Patient______________________________

Vision results using "standard" chart____________________

Vision results using "homemade" chart____________________

Do the results agree?

Questions to consider - The Importance of Precision

1. Could you rely on the results gotten from your "homemade" chart?

   Why or why not?

2. Were any of your results different from those acquired using the "standard" chart?

   If so, explain why you think this happened.

3. Why is it very important to be precise in health care diagnosis and treatment?

UNDERSTANDING WHAT YOU HAVE LEARNED

When you have completed the eye test activities on pages 8 and 9 of this packet, answer the questions below. Be sure to answer in full sentences. These questions will be the basis for a class discussion.

1) *Why is it important to diagnose or identify health problems?*

2) *What are three (3) important steps health workers use to diagnose a problem?*

3) *Explain briefly why a health worker's diagnosis must be precise or exact.*

4) *Do you think you could get accurate and reliable results from an eye chart you made yourself? Why or why not?*

GATHERING, RECORDING AND ANALYZING DATA IN EXPERIMENTAL SITUATIONS

In the next section of this unit, you will try to perform and master three (3) experimental diagnostic skills. Many of these will have to be performed in the laboratory, others you can try right in the classroom or at home. All of the tasks are related to the human body and health care.

While you work on these investigations, remember to record your data very carefully. Imagine a hospital laboratory worker or nurse making incorrect records! Their patients' would really suffer! When you have completed each experiment, you will be expected to come to some conclusions about what you have done. In other words, you must analyze your recorded data.

BLOOD TYPING

If for some reason the amount of blood in a person's body is reduced through bleeding or disease, he may need a transfusion. This means he will have to take blood from another person. But not all people can safely give blood to each other.

There are four types of blood: A, B, AB, O. These types do not all mix together well so it is important to be able to test blood first to find out what type it is. A person with Type O blood is called the "universal donor". He can give blood to anyone. Almost 40% of people have type O blood.

Your teacher will give you all of the chemicals and information you will need to test for each blood type.

Record your data below:

1. SAMPLE #
2. MATERIALS: ______________________
   ____
   ____
3. PROCEDURE (WHAT DID YOU DO?)
4. RESULTS: ______________________
   ____
   ____
5. CONCLUSION(S):

TESTING FOR BODY SUGAR

Our bodies take in, store and use sugar everyday. Sugar has several uses in the body. But sometimes we can have too much sugar in our bodies. Too much sugar can harm us so it is important to be able to periodically test the sugar levels in our blood and urine.

You may choose to test for sugar.

You will need a blue liquid called Benedicts' Solution.

Record your data below:

1. SAMPLE #
2. MATERIALS:
3. PROCEDURE:
4. RESULTS:
5. CONCLUSIONS:

TESTING FOR COLOR BLINDNESS

Some people, almost always men, are color-blind. A color-blind person has difficulty identifying the color red. He sees everything in shades of grey. Why would it be important to test for color blindness? Well, a color-blind person learning to drive might have difficulty, for example, knowing which stop light was red. Imagine the difficulty he might face?

You can test for color blindness with ready made vision charts.

Record your data:

1. TEST FIVE FRIENDS FOR COLOR BLINDNESS

   A) NAME____________________RESULTS:

   B) NAME____________________RESULTS:

   C) NAME____________________RESULTS:

   D) NAME____________________RESULTS:

   E) NAME____________________RESULTS:

CONCLUSIONS:

BODY TEMPERATURE - READING A THERMOMETER

Normal body temperature for most human beings is 98.6 on the Fahrenheit thermometer. When we are sick our temperature may go higher than 98.6 showing that we have fever. We read an oral thermometer by looking at the mercury level inside of it, after we have kept it under our tongues for a period of time, (usually about 3 minutes).

Record your data below:

1. Name______________________________

   Temperature_________________________

2. Take the temperatures of at least 2 friends.

   Name____________________Temperature_______Normal?______

   Name____________________Temperature_______Normal?______

3. Draw a thermometer below. Be sure to carefully record the numbers.

MEASURING HEIGHT AND WEIGHT

In Unit I you measured the heights and weights of your classmates. If you need more practice in completing this skill successfully, refer back to Unit I and re-complete the assignment listed.

GROWING GERM CULTURES

Germs are living things that are so small you can only see them with a microscope. Some germs are harmless but some cause disease or even death. They may be spread from one person to another by food, water, air or soil. Diseases such as the cold virus and malaria are caused by germs. When harmful germs enter our body, they cause infections. Under the right conditions in our bodies, germs grow and multiply quickly. In this experiment you will grow germs and will record the conditions that made them grow quickly.

Materials: ______________________________________

____

Procedure: Dishes A1

A2

Dish B1

B2

Dish C1

C2

Results: Dishes A1, A2 ______________________________________

____

____

B1, B2 ______________________________________

____

____

C1, C2 ______________________________________

____

____

Conclusions: ____

____

____

Draw all of the petri dishes after 1 week: Be sure to label each drawing.

MEASURING CALORIES

After you eat and the food goes through digestion, heat is produced as the food is burned. If we measure the amount of heat given off when food is burned, you can measure the energy in that food. The heat energy given off is measured in calories. A calorie is the amount of heat needed to raise the temperature of 1 gram of water one degree centigrade.

To find this a) measure how many grams of water you have; and
b) how many degrees the temperature of the water is raised.

For example: The temperature of 6 g. of water is raised 4° C. How many calories are required to make this temperature change?

For the number of calories: multiply 6x4 = 24.

Your teacher will now give you several other problems to work out. In each, find the number of calories needed to raise the temperature of the water.

1.

2.

3.

4.

5.

MEASURING BREATHING - HOW MUCH AIR CAN YOU TAKE IN?

Today we hear a lot about how air pollution and cigarette smoking can damage our lungs and shorten our breath. The amount of air we take in when we breathe is important to our health. The oxygen in the air we breathe is used by all of the cells in our bodies.

How much air do you take in when you breathe? You can measure this easily by conducting a simple experiment. For this experiment you will need a pan, a one-half gallon jar, a rubber hose and a glass or metal flat plate.

Purpose of the Experiment

Materials

Procedure (what you do:)

1.

2.

3.

4.

5.

6.

7.

Results:

Conclusions:

Questions:

Why is it important to take deep breaths?

PLANNING A WELL-BALANCED MEAL

We all must have food in order to live. Good food planning is important for good health. Food is needed by our bodies to give us energy and it helps our cells grow and repair themselves.

Nutrients are the food substances that are important for the growth of body cells.

They are: 1) Carbohydrates - high energy foods like sugar and starch;

2) Proteins - used for building tissues;

3) Fats and Oils - high energy goods but not as easy to digest and be used by our bodies as carbohydrates;

4) Minerals - Iron, Calcium and Phosphorus found in the foods we eat;

5) Vitamins;

6) Water.

Every balanced diet must have nutrients in the correct amount. Age, how active a person is, sex and body size and build help decide how much of each nutrient a person needs.

Your teacher will give you a list of the major vitamins and the foods they can be found in. You will also receive a chart listing the four basic food groups.

Study these carefully. After your class discussion, try to plan three well-balanced meals (breakfast, lunch, dinner) for someone just like you.

Questions:

Using your reference charts, try to diagnose which nutrient is lacking in the diest of each person below:

1. Mary had not been eating properly. Her skin was becoming very sallow and also was dry and flaky

2. John had badly sore and bleeding gums.

3. Isabelle always seemed to be tired lately. She didn't seem to even have enough energy to play a game of tag.

4. All of a sudden, Jose realized that he had night blindness.

5. When the doctor's test results came back, Maria discovered that she was anemic, that is, her cells were not getting enough oxygen.

OPTIONAL - Planning a Well-Balanced Diet

1. Every day newspapers carry planned dinner menus. Study one and see if it contains all of the necessary nutrients for a well-balanced diet.

2. Read labels on food wrappers. What do they tell you about the food inside?

3. List all the foods you eat in one day. Then group each according to the nutrient group it probably could belong to. Did you have a well-balanced diet?

RECORDING HEART BEAT

You may remember measuring your heartbeat in Unit I. Remember, you used an instrument called a stethoscope. After you exercised, you probably remeasured your heartbeat and found it to be a lot faster. Why? Exercise makes your body have to respond faster so your heart must speed up and send more blood and oxygen to your cells. This produces the energy you need to do the exercise.

This time, use the stethoscope and the stop watch to record your own heartbeat and the rate of heartbeat of other students in your class.

Design several different activities that might force your heart to pump either faster or slower than normal. Check the validity of your activities by testing them:

A. Your heart rate (in one minute)________________________.

Classmates - a) home	b) Rate
a) home	b) Rate
a) home	b) Rate

B. Activities:

III. MAKING OBSERVATIONS AND INFERENCES

You may remember that in Unit II: Mental Health you were given several photographs of peoples' hands. Your goal was to try to identify what kind of work each person did by observing the appearahce of his or her hands. You imagined that a person worked at a particular job because of the way his hands looked. You were making an inference. When you infer (in-FUR) something, you go beyond simple observations. You imagine something that may or may not be true. For example, you may infer that a man with large, rough, calloused hands works at a lumberyard or construction site. You observed that his hands are rough and calloused, but you inferred that his job in heavy manual work is the reason for the appearance of his hands. Actually, there can be many reasons for the conditions of his hands. Can you think of some?

MAKING INFERENCES

Your teacher will show you several photographs. In each one you can observe many things and you can infer things from your observations. Divide this page into two columns. Head one column "observations" and the other "inference". Describe each observation you make in the first column. In the other column describe the inference(s) you can make from your observations.

Be sure to label each set of observations and inferences with the correct photograph number.

MAKING INFERENCES

It is difficult to make accurate inferences. You can practice making inferences every day. Think: What inferences have you made outside of the classroom today?

Your class will discuss the inferences you made about the photographs. Try to answer these questions before your discussion.

1) *What is the difference between an observation and an inference? How can you tell the difference?*

2) *Can you always prove inferences?*

3) *Why are observations important? Why are inferences important?*

4) *Is it possible for two people to make similar observations but to arrive at different inferences?*

5) *Which are easier to make - observations or inferences?*

OPTIONAL ACTIVITY

Record below as many observations and resulting inferences that you can remember making yesterday (or last week).

HEALTH CARE CONCEPT GAMES

Today your class will begin to play some games that center around health care treatment and diagnosis. Your teacher will explain all of the rules and the scoring procedures. It will be your task to analyze recorded data and to arrive at some logical conclusions as to the causes and names of some diseases and other health disorders.

MASTERY QUIZ

UNIT IV

POLLUTION IN OUR ENVIRONMENT

POLLUTION IN OUR ENVIRONMENT

In this unit, you will learn about the relationship between pollution in the environment and your health. There are several different types of pollution that can harm your health and well-being. Air pollution from factory furnaces and automobile exhausts, dust in the air caused by garbage, strong winds and erosion of land create health hazards. Garbage and trash littered over land not only destroys scenic beauty but also threatens your health. Can you imagine drinking water polluted by factory waste, litter, oil spills and household laundry detergent? People, everyday in the U.S., are drinking water that is not really pure. Another type of pollution is sound pollution. Any student who lives in the city can tell you that he hears many different kinds of sounds during the day. Some sounds are quiet and restful while others are unpleasant noises that can hurt your ears.

This unit will concentrate on air pollution. If this unit is successful, you will be able to:

1. *define: pollution noise*
   environment inversion
2. *list at least 4 sources of air pollution*
3. *describe at least 4 harmful effect of air pollution to people and property*
4. *define inversion and demonstrate the causes and effects of inversion*
5. *think up and suggest some ways to stop air pollution*
6. *name at least 3 other kinds of pollution and give an example and source for each one*

WHAT ARE THE TYPES OF POLLUTION?

Your teacher will show you a group of 10 photographs. Look at each one carefully and then list below all of the types of pollution you see.

What are some of the sources of pollution you can see in the pictures.

Match each type of pollution to its source.

TYPES OF POLLUTION - ACTIVITIES

1. Using magazine pictures and other photographs or drawings, make a collage showing the causes and effects of pollution in our society.

2. For one week, read a local newspaper and cut out any article relating to pollution in our environment.

   Notice the air pollution index reading on the weather page.

3. Think about and write a short essay about this open-ended question below: (Remember, there is no right or wrong answer. Stretch your imagination and be as creative as possible.)

   How would your life be different twenty years from now if:

   A. *Pollution in the air made the temperature 100° all the time;*

   B. *All water, including rain, became polluted;*

   C. *Land pollution and erosion were so severe that people could not grow fresh fruit and vegetables.*

AIR POLLUTION IN OUR ENVIRONMENT

FILM - AIR POLLUTION

Your class will observe and study a film called Air Pollution. As you view the film, think of the answers to the following questions. These questions will be the basis for your class discussion:

1. *According to the film, what exactly is pollution?*

2. *What are some causes of pollution that the film describes?*

3. *Name at least 3 damages to our environment air pollution can cause.*

4. *List below some of the remedies suggested by the film to clean up air pollution.*

   What do think of each remedy suggested?

UNIT PROJECT

You will begin a pollution notebook/scrapbook today. You will be expected to enter pertinent data regarding sources of pollution, their effects and suggested remedies for checking pollution in our community.

You may use television programs, advertisements, newspapers, magazines and other written sources, interviews as well as records of your own observations. Feel free to include your own artwork, cartoons or creative writing.

You will not be evaluated on the amount of material submitted but on the thought and care with which you make and discuss each entry.

AIR POLLUTION EXPERIMENTS

You read and hear a lot about the dangers of air pollution. Perform these experiments carefully and you may understand a lot better why air pollution is harmful.

A. 1. *Weigh a kleenex or absorbant tissue. Record its weight on the space below:*

____

Now, place the tissue over the exhaust pipe of a car or bus. Fasten it with a rubber band. Leave it on for one or two minutes while the motor is running. Then remove it and examine the tissue for particles. What do you see?

What do the particles look like?

How do they feel? How do they smell?

Now weigh the tissue again. Does it weigh more or less now? Why?

2. *Try the experiment again but leave the tissue on for a longer period of time. Is there additional residue?*

3. THINK ABOUT WHAT YOU HAVE LEARNED.

You have inspected and measured the amount of residue on a single tissue that absorbed automobile exhaust for only a few minutes. In 1973, there were 120 million (120,000,000) cars on the road. You can imagine how much pollution goes into the air every minute if you multiply the amount of exhaust you found in just one minute times the 120,000,000 cars on the road in America.

Just for fun, use the space below to do your arithmetic.

B. If someone in your family smokes, ask him to blow some smoke from a cigarette through a tissue or handkerchief. Observe the results.

What do you see?

How does it feel? How does it smell?

What do you think this does to the air in the room and to your lungs?

C. Your teacher will give to you and explain how to use a Ringleman's Smoke Chart. With this chart, you will be able to measure the amount and thickness of smoke in an area.

Your assignment, once you learn how to use the chart, will be to form teams and to make and record observations about smoke pollution in your neighborhood.

Be sure to carefully record each location, day and time of day. These factors are very important when you analyze your results.

Make a set of graphs showing your results. Which areas are most polluted? Which were least polluted? Why?

D. Automobiles, factories, power plants and garbage disposals give out exhausts that contain chemicals called sulfur and nitrogen gases. These gases have a harmful effect on our bodies and also on the building materials of our homes and monuments, such as marble and stone. The following experiment will help you see the harm these gases can cause.

Place a clam shell in hydro-chloric acid. This is a weaker acid often used in laboratory chemical reactions. Its chemical symbols are H_2SO_3. Hydro-chloric acid contains sulfur dioxide gas.

Leave the shell in the acid for 15 minutes. What happens?

After 30 minutes, what happens?

After leaving it overnight, what happens?

What can you conclude about the effects of sulfur dioxide on some solid surfaces?

E. Find out just how dirty the air is in your neighborhood by doing these simple experiments.

Spread Vaseline over a piece of cardboard and place it on an outside windowsill. Dirt particles will collect on it.

Draw the cardboard after one day.

Name as many of the dirt particles as you can (dust, insects, ash).

Draw the cardboard after 3 days.

How dirty is your air? Write a short paragraph based on these experiments.

F. The dirt, dust and other particles that pollute the air also pollute water.

Try this experiment:

Put a pan of water outside in your yard for a few days. Then boil off the water and see how much dirt is left at the bottom of the pan.

Name some of the particles you see.

G. Take a small shopping bag and hold it over your mouth as if you were going to blow it up. Hold your nose and breathe 10 or 12 times through your mouth into the shopping bag, using only the air that is in the bag. How do you feel?

Why?

How does this relate to pollution?

AIR POLLUTION - OPTIONAL GROUP ACTIVITIES

1. Ask an auto mechanic or pollution control board member to discuss with the class the new pollution control devices on cars and trucks.

   What do they think about the effectiveness of such devices?

   Do these devices cause other problems?

   Have the mechanic or control expert give suggestions themselves about how to cut down on air pollution from gasoline engines.

2. Write a letter to the head of Hartford's Water Department. Ask him or her to tell you where your water supply comes from and what the city is doing to keep it pure and clean enough for you to drink.

READING - RANGER RICK'S AIR POLLUTION

Read this small magazine published by the National Wildlife Federation. Then thoughtfully answer the questions below:

1. *What is smog? What causes it?*

2. *How many gasoline engines can you find in the pictures on pages 2 and 3? Name them:*

3. *How do gasoline engines pollute the air?*

4. *How can a garage mechanic help cars from polluting the air?*

5. *What is the 3 month plan? Describe it.*

6. What other things, besides cars, pollute the air?

7. On page 6, Jimmy uses a chart to measure air pollution. How does it work?

8. Does all the pollution in the air collect on the vaseline covered jar? Why not?

9. What do you think you can do about air pollution? Write some suggestions below:

BUILDING AN INVERSION BOX

An inversion box is a box that will help you study the air. Man-made pollution changes the way the air acts. You can see and study these changes with an inversion box.

To make an inversion box you will need:

a. *a cardboard box*

b. *clear transparent plastic wrap, long enough to cover one open side of your box*

c. *tape*

d. *two thermometers*

e. *cigarettes and matches*

f. *ice*

g. *hair dryer*

h. *black tempera paint*

i. *flashlight*

Your teacher will demonstrate how to make an inversion box. She will form you into teams so you can make your own. Your class will do several experiments with inversion boxes.

ACTIVITIES

1. *Look up the word* ***inversion*** *in the dictionary. Write its meaning below:*

You have learned that an inversion occurs when a layer of warm air lies on top of cooler surface air.

A. Answer the following questions in your class discussion:

1. *Why does hot air rise and cool air sink?*

2. *Why is the air often most polluted early in the morning, between 6-9a.m.?*

3. *True/False: Pollution is trapped close to the earth during inversion.*

B. *Have the class appoint a secretary to write for more information on pollution to the Connecticut Air Conservation Committee, 45 Ash Street, East Hartford, Connecticut 06108.*

FILM - TAKE A DEEP BREATH

All types of pollution are harmful to a person's health. The film you will see today shows some of the damage air pollution can cause. A person's respiration or breathing can really be effected by air pollution. Also cigarette smoking can cause shortness of breath and other respiratory problems.

Watch the film closely. Be sure to observe the hospital and other health people involved in helping people with respiratory problems. Note also the other body systems effected by pollution.

DISCUSSION

You have seen throughout this unit how dangerous air pollution can be. Many science fiction films about the future show men and women wearing gas masks in order to breathe because the air is so thick and polluted. If we want these stories to be only science fiction and not reality, we must all pitch in to help stop pollution.

WHAT WILL YOU DO?

NEEDS FOR THIS UNIT

1. 10 photographs showing different kinds of pollution.
2. Multiple copies of Ranger Rick's Air Pollution. (See Teacher's Guide for details)
3. Film - Air Pollution.
4. Film - On Health, Air Pollution and Respiration.

   Suggested film - Take A Deep Breath.
5. Clam Shells

APR 15 1976

Allied Health Field

Eighth Grade

Operation TACT
Field Test Curriculum
1973-1975

CE007156

TEACHERS' HAND BOOK

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
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ALLIED HEALTH CURRICULUM PROCESSES

1. Observing
2. Measuring
3. Interpreting Data
4. Communicating
5. Comparing and Contrasting
6. Forming Concepts
7. Inferring and Generalizing
8. Predicting and Explaining
9. Applying Generalizations
10. Hypothesizing
11. Experimenting
12. Offering Alternatives

Adopted from:

Process of Science Curriculum AAAS

Fraenkel, Helping Students Think and Value. Prentice Hall, 73.

Hilda Taba, Assorted Curriculum Resources.

By: Susan S. Miller and
Margaret C. Collins

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INTRODUCTION: WHAT ARE HEALTH CARE NEEDS?

GENERALIZATION: Within a community there are many different health care needs.

SUB-GENERALIZATION: Who services the community?

In a given community, there are many agencies and clinics which service, or fail to service, community members' needs.

8TH GRADE BASIC STUDIES TEAM

INTRODUCTION TO HEALTH

LESSON I

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Observational Skills	Introduction to Unit: Within a community there are many health care needs. Question: What is health? (Brainstorm) Summary: We have a series of pictures which show other health needs. Based on observation, can you help me list, on the blackboard, possible health needs?	Teacher begins with oral discussion on "what is health". (Students will "brainstorm" at this point). Picture series will be presented. It is suggested that students develop an activity booklet (including new vocabulary words) and skills involved.	Pictures illustrating various health needs: 1. Child with glasses 2. Child with crutches 3. Child with braces and crutches 4. Child with cast 5. Child with wheel chair 6. Child with hearing aid 7. Child with artificia limbs 8. Child with cane 9. Child with measles 10. Child coughing 11. Person smoking 12. Picture of pollution 13. Picture of new born 14. Picture of accident victim 15. Child with temper 16. Picture measuring blood pressure 17. Pharmacist measuring 18. Height and Weight
Taba: Concept Formation Strategy	List: Health care needs observed in the pictures. Group: What 2 or 3 items can you put together in a group? Probe for the reasons behind the relationship. Then have students categorize the rest of the items. For each, probe the relationship. Label: The groups What titles or names could you give each category? Students will record this activity in class.		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	Review:		
	a) Point out the Concept Formation Strategy that was used - listing, grouping, labeling. It will be used again.		19. Someone measuring for a splint 20. Measuring how high or low a crutch should be depending on arm pit
	Review types of health needs discovered in the investigation of the photographs.		
	HW Assignment - To be assigned (if desired)		Photos Blackboard

LESSON II

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Observing *Measuring* *Interpreting Data* *Experimenting*	Refer students to pages 4 - 7 in their unit packet. Review procedure for investigation.	Students will record in their notebooks new vocabulary words.	
Inferring	This activity is designed to familiarize the student with gathering, recording and analyzing data. It is suggested that 2-5 students leave the classroom and that 2 of them perform a simple exercise (push-ups, running in place, etc.) for one minute. When they return to the classroom, the other students should be able to observe and record the symptoms of this activity.	1. Data 2. Analyze 3. Measurements 4. Stethoscopes 5. Precise Question and Answer Session.	5 stop watches 5 stethoscopes Nurse and student as resource person
	Of course, these observations will not be scientifically precise. A distinction between observation and measurement must be made here.	Explanation (teacher) - Increased physical activity causes increase in lung activity due to carbon dioxide production.	
	In the discussion following this initial activity, it is hoped that the students themselves will suggest ways to more scientifically precise data gathering such as the taking of pulse, measuring heartbeat or measuring respiratory rate, etc.		
Predicting	Now conduct the same experiment using these more precise measurements (5 new students) and compare the conclusions drawn.		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Comparing and Contrasting	Interesting variations can be made on the initial experiment such as having one student exercise for ½ minute and the other for 1 full minute. Have the students discuss with you the problem they may wish to set up.		
Hypothesize Predict	One way to convey the importance and idea of precision in data gathering would be to ask the students what would happen if the class measured the pulse rate of the returning students at different points in time rather than measuring the pulse of all 5 at the same time.		
	Hypothesize then perform experiment. Have students record data and then they should explain what happened and why.	Teacher will record on board the results of the pulse rate from 10 students in graph form.	
Interpretation of Data	Students will develop pulse rate chart from results of 10 students and include in activity workbook.		

LESSON III

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	Case History - Diagnosing Health Care Needs Introduction: What happens when you go to a new doctor for the first time? (Nurse or receptionist takes a case history) What is a case history? Why is it important? What does it tell you?	Include these questions with answers in notebook.	
Communication	Ask the resource person to come in. Distribute forms to students - Practice filling them out in student handbook (Page 8).	Also can use examination forms. Include completed form in student notebook.	Public Health Nurse as resource person. Case History forms.
Measurement	Back-Up Math: a) Measuring height and weight, demonstrate use of scale and height measurement attachment (or tape measure can be used) - study inches and feet. b) Have students select partners and measure and record height and weight of each other in unit packet. c) Graph heights and weights Male vs. Female - Linegraph d) Find the average height of girls - for boys.		Scale and Height Attachment. Graph Paper.

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Compare and Contrast	Find the average weight for girls - for boys. Compare. What is the difference in pounds? in inches?	Teacher will develop graph in regards to results of height and weight obtained in earlier exercise.	Blackboard Activity Books
	Science - Suggested	Graphs devised will be included in activity books for further reference.	Reference materials on taking blood pressure.
Measurement *Recording* *Experimenting*	a) Refer to case history and other medical forms asking for blood pressure and heart rate. Using a stethoscope, demonstrate how to measure blood pressure. Also use a sphygmometer. b) In pairs, under supervision, have students take and record blood pressure. c) Demonstrate how to measure radial pulse. In pairs, have students take, measure and record radial pulse of their partners.		Stethoscope Blood Pressure Gage or Sphygmometer Unit Packet Watch - Stop Watch Unit Packet Record Sheet

LESSON IV

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Concept Formation	Review from first lesson Taba Strategy.		
Taba Strategy (Students)	Have students analyze data collected in terms of specific health needs. Move the students towards naming the different areas of need.		
	List Group Label - in terms of types of medical help	"Brainstorming" (No photographs)	Unit Packet Record Sheet
	Emergency Treatment Preventative Custodial Environmental Rehabilitative Out-Patient		
Interpreting Data	Have students refer to the appropriate exercises in the unit packet.		
	Record all data.		
	Which area has the highest frequency of occurrence?		
	Pages 12, 13 and 14 in Unit Packet.		
	Teacher will record on the blackboard the names of the specific health ailments volunteered by the class during listing (or refer to those already put on the board during the Taba Strategy).	Bar graph developed will be included in student activity book.	Graph Paper

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Predicting *Measuring*	a) To find out which health ailment occurred most often, ask the students to make a bar graph showing the frequency of occurrence of the 5 most often mentioned ailments.		
Compare and Contrast	b) Then do a bar graph showing the frequency of the different categories of treatment.		
	Questions for discussion:		
Predict and Explain *Apply Generalizations*	1) What do these graphs show you about health care and health care needs in your community?		
	2) What don't they show?		
	Summary: Ask the students to again list and define the different types of health care services.		
	Or: Distribute and read aloud together a review reading on the types of care. Treatment Preventative Custodial Emergency Environmental Rehabilitative Out-Patient		Reading on health care services - different types
	Assignment: Vocabulary exercises - List 1 is a priority list.		

LESSON V

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	Subtopic: Who services (or fails to service) the community in terms of health care needs?		
	1) Film - either: a) Code Blue or b) Careers in the Allied Health Field Channel 24 - Hartford (encourage note taking)		Films
	Assignment: Complete Film Questions in student packet, Page 18 and 19.		
	Discussion: Suggested Topics and Questions		
	a) Were there any areas of need that were not mentioned before? If so, add them to the categories made earlier or begin new categories.		
	b) What kinds of people did we see helping the patients?		Unit Packet
	c) What skills did these jobs require?		
	d) Did these jobs and skills service the types of medical needs we learned before? (e.g. preventative, treatment, etc.)		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	2) How do people get the medical help they need? Where can they go?		
	Field Trip: To neighborhood clinic or other health facility.	Community Health Center Albany Avenue	Field Trip
	Discussion: Students should be able to name at least 4 types of health care facilities available in the community.		

SUGGESTED ACTIVITY

I. Each student will be responsible for taking the height and weight of each member in his class.

EXAMPLE OF CHART

NAME	HEIGHT	WEIGHT	SEX
John Doe	6' 1"	158	M

After projects are in, students will compare charts to see how answers vary.

a) Stress accuracy (compare to see whether Jane has John Doe weighing more than Sue, etc.)
b) Try to find out why men normally weigh more than women?
c) Compare the average weight for girls against the average weight for boys.

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UNIT II

ALLIED HEALTH: MENTAL HEALTH

GENERALIZATION: A person's sense of well-being comes from feeling adequate and worthwhile in the roles he chooses or must play in relation to other people.

SUB-GENERALIZATION: People have a sense of worth and well-being on their jobs if they can do the work well and if they enjoy the roles that their jobs require.

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	INTRODUCTION TO UNIT - WHAT IS A ROLE?		
	Ask students to collect and analyze data on jobs and job roles.		
Observation	1) Observe 5 photographs of hands - Probe, at first, for observations only - What can you tell me about each pair of hands?		Photographs Unit Workbook
Inferring	Then ask for inferences - What do you think this could tell you about the person's job?		
Observation *Taba-Hand Strategy*	2) Observe family members' hands - What things did mother's hands do during the day? father's hands?		Handbook
	List them all.		
Comparing/Contrasting *Taba-Concept Formation*	**Make comparisons.** If desired, students can list, group and label activities for discussion.		
People, Data, Things	Introduce concept of people, data & things as a means of differentiating between jobs and job roles.		Handbook
	Analyze mother's day in terms of people, data, things.		
Communicating	Discussion - How do the jobs or activities done by a person's hands place him or her in a certain job role?		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	Summary - Role - definition - compare to actor's role. Strategy - review and point out people, data, things strategy. It will be used again.	Redefine role	Dictionary
Measuring	Back Up - People, Data, Things Math: Percent % What % of mother's time is spent with people? with data? with things? Rate other jobs. Work out percent.		
	IDENTIFYING ROLES - Activities to strengthen understanding of job roles.		
Observing	a) Show a short Mickey Mouse or Peanuts cartoon.	Cartoon available through Sue Miller	Cartoon-motion picture projector Peanuts-newspaper
Interpreting	Probe for the relationship between the major character and People, Data, Things. What type of role does he play?		
Inferring	b) Record two short job descriptions. Briefly describe each position and its contact with people, data, things. Omit the job title in the description. Have students infer the job role from the data presented.		Tape recorder Job descriptions Workbook
Communicating *Inferring* *Interpreting*	c) Reading - Hospital People - Choose a short selection. Read and discuss. Stress life style of the worker.		Hospital People

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Communicating	d) Have students write Want Ads outlining different occupational roles.		Want Ads from COURANT, TIMES as samples.
Communicating Concept	e) OPTIONAL - Have students create a poster, sketch or cartoon illustrating one of the following job roles - 1) Military man 2) Housewife 3) Student 4) Musician 5) Nurse 6) ____________		Poster paper Colored pencils Rulers
Explaining *Comparing and Contrasting*	A) WHAT ROLES AM I EXPECTED TO PLAY? 1) Make students aware of conflicting roles within the same person. Ask them to think about and list the people who make demands upon them or the people who they wish to please. They must identify the demands.		Handbook - Pages 8, 9
Communicating	Discussion - Which demands or pressures are in conflict? Why? How does each demand force you into a certain role? Can roles conflict? How do conflicting roles alter a person's outlook? 2) Role Model Wheel - Ask students to create a role model wheel based upon the conflicting demands they placed on their list.		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Communicating	Discussion: What are my expectations of myself in terms of my family, friends, etc.?		
	B) THE ROLE OF A STUDENT - Deals with all three - people, data and things. Attempt to familiarize the individual with all aspects of working/business contact.		Handbook - Page 10
	Ask students to note several pressures or demands they experience as students. List them. Look at all responses in terms of people, data, and things.		
	Prepare students for role-playing session. Use video-tape recorder.	Shafter, Fannie and George, "Role Playing for Social Values" in Joyce, Bruce R. Three Strategies for Teaching Social Studies, Science Research Associates, 1972	
	Role play some of the student role situations that were entered on Page 10 of the workbook.		Video-tape Role-Playing Observation Data Sheet - Page 12 and 13
Offering Alternatives *Comparing/Contrasting*	Ask students to: a) Fill out the Role-Playing Observation Data Sheet for each episode they view. b) Think of alternative endings and solutions for each situation. Compare ending.		
	Stress the roles played in each enactment as well as the perceived expectations of others.		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	ROLES AND THE ENVIRONMENT		
	Read selection from Black Boy by Richard Wright, pages 15-17.		Selection from Black Boy - pages 23-25
	Direct students to discussion questions on page 18 of Student Handbook.		
	How does environment help shape the roles we must play?		
	(English - What is an Autobiography?)		
People Data Things	WHAT ROLES DO I LIKE BEST?		
	a) DATA COLLECTION - TIME CHART		
Interpreting Data	1) Reintroduce students to People, Data, Things. Ask them to trace a day in their lives. What roles do I like best? Who did I interact with? What portion of my day was spent with people? with Data? with things?		
	b) Back Up		Student Handbook Page 19, 20
	Math problem - based on time chart, what % of time is spent with people, data, things?		
	Make a circle graph showing your results.		

LEARNING PROCESS	ACTIVITY	NOTES	MATERIALS
Predicting and Explaining	Ask students to build an imaginary time chart depicting an ideal day.		
Communicating Comparing/Contrasting	c) INTERVIEWING SEVERAL ALLIED HEALTH PROFESSIONALS Select one representing each life style. Have students interview in terms of people, data, things. Focus on Life-style as it relates to well-being. After the students develop the interview instrument, refer them to the Job Role Chart on Page 22.		Page 22
Observing	Suggested Guest Speakers: 1) LPN - deals primarily with people. 2) LAB TECHNICIAN - Data-perhaps one on a bloodmobile or a technician in a pollution control lab. 3) AMBULANCE DRIVER - Things - ELECTROCARDIOGRAM TECHNICIAN and PHYSICAL THERAPIST - works with all three.	See Curriculum Specialist to arrange for speakers	
	OPTIONAL ACTIVITIES - relating to Guest Speakers and concept of People, Data and Things. See Page 25 of Unit Handbook. These activities can be used as back-up exercises:		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Communicating	a) Record a conversation between an LPN and a Patient-English Writing Class		Unit Handbook Page 25
Experimenting *Measuring* *Recording* *Observing* *Interpreting Data* *Explaining*	b) Science Activities - 1) Blood typing. 2) Looking at slides of blood.	Slides and blood typing solution available through TACT office	
	JOB ROLES - SELF-ASSESSMENT -		
	Try to get the students to look at different occupations in terms of roles and skills needed.		Health Careers Guidebook (HEW)
Offering Alternatives *Predicting and Explaining*	Assess a job and then have students make a self-assessment as to roles they might need to improve for that job, skills they must acquire, things they must learn, etc.		You can work In The Health Services John Day, Co., N.Y.
Recording	Ask students to work with their guidance counselor on the assessment of jobs - page 27.	Guidance Counselor is an integral part of this exercise.	Unit Handbook Pages 26, 27
	The list on page 27 can be updated periodically as the students are introduced to other careers.		
	OPTIONAL - CONCLUDING ACTIVITY - DEATH OF A SALESMAN - film	Film to be ordered by TACT	
	Discussion of roles and Well-being - Possible discussion questions are listed on Page 28 of Student Handbook.		

UNIT III

TREATMENT

UNIT III: TREATMENT

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	Unit Objectives - 1. Students will be able to define: diagnosis data infer treatment analyze record 2. Student will demonstrate skill in at least 3 of 10 areas which stress diagnostic gathering, recording and analyzing data. 3. Student will be able to use a Snellan or other eye chart to test vision and will correctly gather, record and analyze data taken from this test. 4. Student will be able to make accurate observations and justifiable inferences from his observation.	Vocabulary lists, introductory statement and objectives may be found in the student handbook pages 1 and 2.	Student handbook

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	I. INTRODUCTION TO THE UNIT: Why is accurate diagnosis and subsequent treatment of health disorders or problems necessary for good health:		
Divergent *Thinking* *Strategy*	Divergent Thinking Strategy: Suggested Question: How would your life be different if everything you saw was blurred and you didn't have glasses?	Strategy: a) Listing b) Grouping c) Labeling d) Evaluating Responses (optional)	Blackboard to record all responses.
Communicating *Inferring* *Alternatives* *Hypothesizing* *Forming* *Concepts*	This strategy allows student to derive the importance of proper health care (more specifically, eye care) and the necessity for treatment of problems, etc. It also induces creativity and stimulates class discussion. Categorizing lead to concept formation.	Review of Strategy Rules: Brainstorming a) Accept all responses; no criticism. b) Don't repeat or rephrase responses. c) When students are temporarily out of ideas, remain silent and allow them to think; d) encourage hitchhiking. e) Use a follow-up activity.	Divergent Thinking Teacher's Handbook For West Research Laboratories
	LIST all responses on board. Then ask students to GROUP the items that seem to go together.		
	Probe for the reason(s) behind their relationships.		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	LABEL each group. Give it a title that fits all of the members of the group.		
Recording	Ask students to enter all lists, groups and labels in their handbook on the appropriate page.		Student handbook
Compare/Contrast	If desired, proceed to the fourth step in the strategy - Evaluation. Ask students to set up an evaluation criteria and then to measure each response against that criteria. In this way, less creative and irrelevant responses can be weeded out.	This 4th area is optional.	
	Follow Up Activity - Blurred Slides and Photographs.		
Observe	Show the class a series of blurred and vaguely distinguishable photographs and slides. Explain that this is to simulate poor vision that goes untreated (i.e. - no glasses).		
Observation *Recording*	a) Ask students to observe each photo or slide and to record what he or she thinks the picture or photograph is of. Then bring photos into focus to test the accuracy of the students' guesses.		Photos Slides Projector Student handbook
Effective *Domain* *Communicate* *Explain*	b) Question for students to think about and discuss: How did you feel when you had difficulty identifying what was happening in the picture?	Since all areas of health care require a certain degree of empathy and worker-patient identification, this question(b) will help student to begin to consider the feelings of disabled or temporarily incapacitated people.	

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Hypothesize *Inferring* *Alternatives*	c) What do you think could be done for a person with blurred vision? This question should direct students toward the concept of treatment of health disorders. Once a disorder is diagnosed, what are the treatment alternatives? Here, too, an open brainstorming session to answer this question is recommended.	This question emphasizes the importance of treatment in health care.	Student handbook
Observation	Assignment - Find at least 3 or 4 pictures or drawings of people with possible health deficiencies or disorders.		Magazines Newspapers Books Pictures Photos Drawings
Interpretation *Record Keeping* *Explaining* *Communicating*	1. Ask students to identify possible health problems shown in the pictures. 2. Then discuss why treatment of each condition noted in #1 would be important to a person's sense of well-being (Unit II - Mental Health) and health.	Refer to Unit II - Mental Health to review concept of "well-being".	
Hypothesizing *Inferring* *Alternatives*	3. Ask students to suggest possible kinds of treatment for each condition.		
	II. DIAGNOSING A HEALTH PROBLEM		
	A. Fact Sheet - The fact sheet in the student handbook explains briefly the application of data collecting, record keeping and analyzation in health care diagnosis and treatment.		Student handbook

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	Students should carefully read and discuss the selection. In later sections of the unit, they will be expected to perform experiments and to follow the 3 step data process.		
	B. Gathering and Recording Data	Ask school nurse to demonstrate the use of the Eye Chart for vision testing and to explain how vision is calculated using the chart. (e.g. - 20/20, 20/30, etc.).	Eye Chart School Nurse Student handbook
Observation	The Eye Test Demonstrate the proper use of the eye chart as a means of diagnosing eye malfunction or disorders in vision. Be sure to call students' attention to: a) distance away from chart they must stand;		
Observation	b) necessity of gently covering each eye. Allow students to inspect the chart, note the size of the letters and their distance from each other.		
	Then ask students to pair off and to test each other's vision. To: a) Gather vision data		Handbook
Recording	b) Record it in the student handbook		
Analyzing	c) Analyze it. Does your partner seem to have 20/20 vision or did he or she have problems reading the chart?		
	C. Analyzing Data	It may be necessary to review the major concepts of graphing and averaging.	Graph paper
Measuring	Collect all of the data gathered by the students in the class. Then have		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Recording	students: 1) Graph vision Male vs. Female - Use a Line-graph.		Student handbook
Analyzing	2) Determine the average left eye vision for boys.		
Compare/Contrast	3) Average the left-eye vision for girls.		
Inferring and Explaining	4) Question - according to the data collected, who has better vision in the class, girls or boys?		
	D. Why is Precision So Important in Health Care Diagnosis and Treatment?		
	This area of the unit is designed to make students aware that when dealing with human lives in health care, precision is a vital factor. If a diagnosis is not based on precise and accurate data, the patient's life may be put in jeopardy.		Student handbook
Hypothesize	Now that students have already recorded vision with standard eye charts they can try to hypothesize how different the results might be using a homemade chart.	It may be advantageous to discuss the differences between a standard chart and a homemade one.	Oak tag Pencils Pens Rulers
Experiment Record	Have students make their own charts. Then ask them to test the accuracy of their work by re-testing their partner's vision with this new homemade chart.	Define precision.	
Analyze	Are the results the same? Why or why not?		Student handbook

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Communication	Questions:		
Explaining *Recording* *Analyzing*	1) Could you rely on the results gotten from your "homemade" chart? Why or why not? 2) Were any results different from those acquired using the "standard" chart? If so, explain why. 3) Why is it important to be precise in health care diagnosis and treatment?		
	OPTIONAL ASSIGNMENT		
Predict and Explain *Hypothesize*	Now that the students have experienced vision testing, it may be interesting to record their generalized interpretations of the results. They have already compared the vision of their peers. In this assignment, refer them to other age groups.		
Compare/Contrast *Record* *Interview* *Observe*	Question: Do you think a person's vision gets better or worse with age? Ask students to support their answers by interviewing and describing the vision of at least 6 different adults. Then compare and contrast these results to the class results acquired earlier.	It is suggested that the teacher help the student draw up a few simple interview questions that would help direct the student's inquiry in the right direction.	Interview forms Previous class eye test results in handbook.
	Review - Summary		
	UNDERSTANDING WHAT YOU HAVE LEARNED		Student handbook
	This mastery review concerns the		

major areas discussed in the first part of the unit -

1) Why is it important to diagnose or identify health problems?

2) What are three (3) important steps health workers use to diagnose a problem?

3) Explain briefly why a health worker's diagnosis must be precise or exact.

Hypothesize
Predict

4) Do you think you could get accurate and reliable results from an eye chart you made yourself? Why or why not?

II. GATHERING, RECORDING AND ANALYZING DATA IN EXPERIMENTAL SITUATIONS

In this section students will begin to practice using the data collection and analyzation technique. There are 10 simple experiments most of which can be performed in the classroom. Many require a science background, others require no more preparation than a simple review of the materials listed in this guide.

Students are to select 3 out of the 10 exercises. For each, they are to record all necessary data. Whenever possible, explanations and results should be drawn and labeled. Once data has been gathered and recorded in the proper experimental format, students are to analyze all data and formulate logical conclusions.

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	By conducting these experiments properly, students not only acquire mastery of simple health related tasks but also learn a valuable problem-solving technique.		
	1. Blood Typing: A. Background	Reference Text:	
	Small amounts of blood mixed with serum will indicate blood type. Use 2 serums, one with Anti A agglutinin, the other with Anti B. Type AB - no agglutinins in plasma AB - red cells have both A and B agglutinogens Type A - plasma - Anti B agglutinins red cells - type A agglutinogens Type A - Anti A agglutinins red cells - type B agglutinogens Type O - Anti A and Anti B agglutinins in the plasma red cells - weak agglutinogens.	King and Showers. Human Anatomy and Physiology; W.B. Saunders, Co.; Philadelphia, Penn.; 1969	Blood Typing Kit (coagulants and color charts).
	B. Experiment:		
Experimenting	1. Sample # - Ask students to prick their fingers to obtain a small blood sample or give them a small amount of blood to test.	If blood is already obtained, be sure to number each sample for ease in laboratory results.	a. blood samples

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	2. Materials: blood sample 2 serums - Anti A and Anti B agglutinins. slides microscopes (eye dropper) small toothpicks (to mix blood and serum) chart of clumping as reference		b. Anti A and Anti B serums c. slides d. microscope e. eye droppers f. charts as references g. toothpicks h. drawing paper i. student handbook
	3. Procedure: Obtain blood sample Make wet mount of sample Mix with Anti A Make second wet mount of sample Mix with Anti B		
Recording	4. Results: As determined by blood type Should include drawings of reactions taking place.		
Hypothesizing	5. Conclusions: Should state blood type tested		
	2. Testing for Body Sugar: A Background		
	When Benedicts solution is heated with a reducing sugar it forms a precipitate, the color of which varies from	Besides testing urine and saliva, students may want to test different foods for the	a. Benedicts solution b. Urine samples c. Saliva samples

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	green to orange to red to brown depending on the amount of reducing sugar present.	presence of glucose	d. test tubes e. heat source f. Student handbook
	B. Experiment: Materials: at least 5 ml of Benedicts solution for each test; test tubes; Heat source; samples to be tested Procedure: Add about 10 drops of the sample to 5 ml of Benedicts solution; boil carefully for 2 minutes; allow to cool; record observations. Conclusions: presence of sugar will be indicated by precipitate color. Brown shows the presence of a great deal of sugar.	This test works only for a reducing sugar (sucrose). A non-reducing sugar must first be treated with hydrochloric acid.	
	3. Testing for Color Blindness - Using the charts, the subject must try to see if he can read numbers on them.	Charts can be obtained from school infirmary	a. Color Blindness Test Charts b. Student handbook
	4. Body Temperature - Reading a Thermometer Here in the interest of precision, it is important for the student to un-	To give the students additional practice in thermometer reading, it is suggested that additional simple experiments be used.	

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	derstand that he must shake down the thermometer before each use.	For example, put thermometer in hot water and on ice.	
	5. Measuring Height and Weight see Unit I - Introduction to Allied Health These exercises, because of their importance, have been reincluded in this unit. Many students may want to review the procedures involved.		Unit I - Introduction to Allied Health
Experiment *Observe* *Record* *Hypothesize* *Analyze*	6. Growing Germ Cultures - An integral part of health care is the knowledge and understanding of germs and germ growth. In this experiment, students culture germs.	Reference: Oxenhorn, Joseph M. Pathways in Science - Biology Book 2. New York: Globe Publishing Co.; 1969	
	Materials: Petri dishes with agar and lids. (at least 6) (sterilized)		Petri dishes agar covers milk dark area light area milk saliva microscope slides eye dropper Student handbook
	Procedure: 1) In dish A1 - leave it closed, put it in dark place (warm). A2 - leave it closed and sterile - put in refrigerator. Dish B1 - open lid for 5 minutes and then reclose. Put it in a warm place (dark). B2 - open lid for 5 minutes then reclose. Label and put in refrigerator.	Be sure to label all jars. All #1 jars go in a warm, dark place (e.g., closet). All #2 jars go in the refrigerator.	

LEARNING PROCESS | ACTIVITIES | NOTES | MATERIALS

C1 - Put a drop of milk into each.
C2 - Place one in a warm dark closet, the other in the refrigerator.

OPTIONAL -

D1--- Saliva put on each
D2

2) Leave dishes undisturbed for one week.

3) Ask students to check jars - note the conditions under which germ colonies have grown.

4) Record all results. Draw and label each petri dish and its contents.

Conclusions: (to be discerned by the students)

a) Some dishes have developed colonies, others have not.
b) A sterile, unopened dish has no colonies.
c) There are more colonies when the temperature is warm.

Observe

Also Optional - Make slides of some germ smears grown during the week.

Observe them under the microscope and redraw the specimen as they appear magnified.

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Measuring *Recording*	7) Measuring Calories Procedure for measuring the number of calories needed to raise water one degree centigrade is outlined in the student handbook. Procedure: a) Provide students with several sets of figures to compute calories required. b) Provide students with thermometers and water samples. Ask them to take temperature readings before heating and then to take temperature readings after a designated period of time. How many calories are required to make this temperature change? Record all answers.	If the instructor desires, this exercise could also include a lesson on the fahrenheit vs. the centigrade thermometer. Students could measure and compute with both.	Student handbook Thermometers Water samples
Experiment *Record* *Observe* *Measure* *Analyze*	8) Measuring Breathing - How Much Air Can You Take In? Materials: See Materials at right Procedure: a) Mark the jar at the quarter, half, eighth, three-quarter points. b) Fill the jar with water c) Put the glass plate over the mouth. d) Put the jar upside down in the pan filled with water. e) Remove the glass or metal plate from the mouth of the jar carefully and put the hose in. f) Take a normal breath and then		Large pan 1/2 gallon jar rubber hose flat metal or glass plate Student handbook

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	exhale into the tube. g) Mark the spot that shows how much water is left in the jar. h) Refill the jar and repeat taking a very deep breath. Compare the two results.		
	Results: (to be discerned by students) a) As you exhale into the tube, the water will move out of the jar and into the pan. b) More water moves out of the jar (is displaced) when you breathe deeply than when you breathe normally.		Student handbook
	Conclusion: You can measure how much your lungs can hold by measuring how much water is displaced.		
Hypothesize *Explain*	Question: Why is it important to take deep breaths? This question has been included to make the students consider the importance of the assignment and the direct connection to health and physical well-being.		

9) Planning a Well-Balanced Meal

Student handbook

The reading selection in the student handbook briefly outlines the six basic nutrients; their importance and nutritional value.

Other data necessary for completion of student activities can be found below:

A. IMPORTANT VITAMINS

VITAMIN	FOODS CONTAINING	WHY IMPORTANT
VITAMIN A	green & yellow vegetables, milk, butter, cheese, liver, eggs, tomatoes.	helps avoid colds, helps avoid night blindness, keeps nasal tissue healthy.
B_1(thiamine)	milk, meat, liver, green vegetables, whole grain cereals, eggs,white bread.	helps digestion, prevents beri-beri, helps appetite, needed for growth.
B_2(riboflavin)	milk, eggs, cheese, meats, poultry, liver, peas, green beans.	helps respiration, keeps skin healthy, helps vitality.
C(ascorbic acid)	citrus fruits, tomatoes, fresh fruit and vegetables.	prevents scurvy, keeps gums and teeth healthy.
D	milk, fish, liver oil, oysters, sunshine	strong bones and teeth prevents rickets
Niacin	whole grain, liver, meats, fish, eggs, beans, peas, nuts	prevents pellagra, helps muscle cells use foods.

B. NUTRIENTS AND WHERE THEY CAN BE FOUND

Carbohydrate Sugar	candy, granulated sugar, syrup, fruits, cookies, sweets.
Starch	bread, cereals, potatoes, macaroni, rice, cakes.
Fats Oils	butter, margarine, nuts, egg yolk, salad dressing, cream
Proteins	milk, fish, cheese, peas, beans, nuts
Vitamins	See Chart A
Water	Drinking water, most foods, milk, vegetables

Calorie charts may also be obtained as supplementary material.

C. BASIC FOOD GROUPS (for a balanced diet)

I. HEAT - 2 servings or more of chicken, fish, meat or eggs. Also dried beans, dried peas, nuts, peanut butter.

II. VEGETABLES and FRUIT - 4 or more servings. At least 1 fruit and 1 dark green or yellow vegetable.

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	III. BREAD/CEREAL - 4 or more servings.		
	IV. MILK - At least 3-4 glasses. Also cheese and ice cream.		
	It is not expected that students be able to plan proper nutritional meals with 100% accuracy. It is hoped that they will begin to become aware of all of the factors necessary in proper diet planning.		
	OPTIONAL ACTIVITIES - These activities have been included as supplemental reinforcement exercises.		
Communicate *Hypothesize* *Analyze* *Record*	*Questions*: (See student handbook) Purpose of questions is to again make students aware of the direct connection between proper eating habits and physical well-being.		Student handbook
	10) Recording Heart Beat		
Experiment *Measure* *Observe* *Record* *Analyze*	Students form teams. One acts as the patient, the other the health worker. The health worker is responsible for keeping an accurate record of his findings (this again reinforces the importance of accurate record keeping). Using	It is requested that teachers have available, as supplemental material, diagrams of the heart and the origin and mechanics of a heart beat.	Student handbook Stethoscopes Stop Watches

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	stethoscopes and stop watches, students measure and record each other's heart beat.		
III.	MAKING OBSERVATIONS AND INFERENCES		
	An inference may be defined as an explanation for something observed. In this section of the unit, students will practice making logical observations and justifiable inferences about them.	Suggested photos: a) girl blinking b) crowd of people (what are they doing) c) different hands (infer type of work) d) street scene	Student handbook picture series
	1) In order to introduce the idea and concept of making inferences, the teacher can show the students several pictures that have multiple interpretations.		
	e.g., - A girl blinking - or is she winking? a) What can you observe about the photograph? b) What can you infer from your observations? c) Are your inferences logical? How can you justify the inferences you have made? d) What is the difference between an observation and an inference? OPTIONAL - Ask the students to think of and write out several observations and possible resulting inferences.	Throughout all discussions it must be emphasized not all inferences can be proven. An inference can only be supported by other evidence. There are no absolute answers.	Student handbook

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	e.g. - If you wake up and see wet streets, you can infer that it had been raining. Wet streets are observable; the fact that it had been raining is an inference (very logical one).		
	2) Given a list of symptoms or photos of "unhealthy" persons, students will be able to observe problems and make justifiable inferences about the reasons or origins of the situations depicted.		
	3) Concept Attainment Games - Attribute Game	Games by William Clement and available through TACT staff.	Attribute Games
Observe *Record* *Analyze* *Infer* *Generalize*	In this set of attribute games students observe and record the symptoms of several diseases. Through a process of elimination they try to establish a positive diagnosis of the disease or abnormality. Among the illnesses used are the common cold and sickle cell anemia. Based on their observations and background information, students try to infer a justifiable diagnosis.		

UNIT IV

POLLUTION IN OUR ENVIRONMENT

ALLIED HEALTH FIELD

UNIT FOUR - SEVENTH GRADE

POLLUTION IN OUR ENVIRONMENT

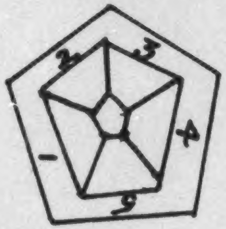
GENERALIZATION - Pollution in our environment can be injurious to a person's health and well-being.

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	I. Types of Pollution		
Observational Skills	A. Introduction to the Unit - Teacher shows class a group of ten (10) photos each depicting a different type of pollution or pollution-related problem. Question - What are the types of pollution? Students brainstorm possible pollution sources and types while observing pictures carefully.	The Taba strategy has been used to introduce several units in this series. For more detailed background information, see Unit I - Introduction to Allied Health Care.	1. Photographs of environmental pollution sources. 2. Student Handbook Pages 1 and 2
Taba Concept Formation Strategy	List - Sources and types of pollution noted. Group - Probe for relationships between items. Label - The groups to arrive at major types of pollution in our environment. Give titles or names to each group. Then ask students to match each type of pollution to one of its main sources - e.g., air pollution to factory fumes, automobile exhausts, etc. One sub-objective of this activity is to make students aware that man's rapid strides in technology have created serious pollution problems.		
Observing Forming Concepts	B. Learning Activities - Types of Pollution 1. Ask students to create a collage showing the causes and effects of pollution in our society.	These activities are designed to make students aware of the increasing threat of environmental pollution in our society.	a) Magazines, photographs, pictures of pollution. b) One week's newspapers.

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Interpreting data Comparing/Contrasting Applying Generalization	2. For one week read a local newspaper and cut out articles relating to pollution. Notice the air pollution index reading each day. Is the reading above or below normal? How injurious is the pollution level to our health? Compare each day's reading to the previous day. Do pollution levels seem to go up or down with any regularity?		
Divergent Thinking Strategy	3. Ask students to write an essay based on the open-ended question detailed on page 3 of the Student Handbook. This assignment is included to force students to begin to think about possible long-range effects of serious and prolonged pollution.	The *Divergent Thinking Strategy* by The Far West Research Laboratories is outlined in detail in earlier units of this series.	Student Handbook Page 3.
	II. Air Pollution		
Observing Recording Analyzing data	A. Film - *Air Pollution* (JF-F-18) 11 minutes Ask students to watch film for a) Definition of pollution stated. b) Cause of pollution described. c) Damage air pollution causes. d) Remedies suggested in the film.	It is suggested that students take notes, regarding the pertinent information included in this film.	Film Page 4 Student Handbook
	Discuss the film using the questions on Page 4 of the handbook as a basis for the discussion.		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
Communicating *Explaining*	Then show the film a second time without sound and ask the students to fill in the information or main points orally.	Students should be able to give a working definition of pollution, list some causes and effects, as well as possible remedies.	
Offering Alternatives	Optional Homework Assignment - Ask students to evaluate each remedy suggested in the air pollution film and to suggest possible alternative remedies.		
	B. Unit Project		
Observing *Recording* *Explaining* *Interpreting data* *Measuring* *Comparing/Contrasting* *Predicting*	Ask students to begin a notebook into which they should put pertinent newspaper and magazine articles on pollution, as well as records of their own observations of pollution in their community.		Handbook Page 5
	Students may use a variety of sources, including observations, television programs, advertisements, newspaper articles, and other written sources, creative writing, artwork, cartoons, etc.		
	After a reasonable period of time has elapsed, teacher can lead a discussion concerning how the items included in these unit scrapbooks relate to the health and well-being of the human body.		Handbook Pages 6 - 11

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	C. Experiments		
Observing *Recording* *Experimenting* *Measuring*	A. Particles in Air Pollution 1. Weigh a Kleenex or other absorbent tissue; then place it over the exhaust pipe of a running car. Remove the tissue and inspect the particles on it. Weigh the tissue again.	On these experiments, please see student Handbook for specifics.	Kleenex tissues Car exhaust Rubber band Balance scale
	2. "Think About What You Have Learned"		
Measuring *Predicting* *Analyzing*	This activity will help the students realize the massive amounts of automobile residue placed in the air daily and, hopefully, will lead them to think about the harmful effects of such large doses of particular residue.		
Observing *Predicting*	B. Cigarette Smoke (and its possible effects)		Tissue/Handkerchief Cigarette smoke
Comparing/ Contrasting *Experimenting*	C. Ringleman's Smoke Chart This chart is divided into five major areas and has a hole cut out in the center. Ask the students to observe the different degrees of gray shading in each of the five areas on the chart. If they hold the chart at arm's length and hold it up to smoke (gray) caused by chimneys, auto exhausts, airplane fumes, etc., with the sun at their backs, they can compare the smoke they are looking at to the five numbered shades of gray on the chart. In most charts any degree of shading beyond block #1 is at a dangerous level.	This chart may be obtained through the Connecticut Air Conservation Committee, 45 Ash St., East Hartford. It is also depicted and explained in most elementary science textbooks. Any one of several smoke charts may be used for these activities.	a) Smoke Chart b) Handbook Page 8 c) Outside trips to observe air pollution smoke.

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	 DIFFERENT DEGREES OF SHADING #1 - lightest and least dangerous. #5 - darkest gray - high levels of pollution.		
Experimenting *Observing* *Measuring* *Comparing/ Contrasting* *Predicting* *Recording Data*	Introduce the smoke chart, explain its organization and use, and ask student teams to make observations in their neighborhood and other areas. Ask student teams to record location, day and time for each reading, and have them graph their results. Then collate information for each area and compare frequency and degree of pollution in different areas of Hartford and its suburbs.	It may be necessary to organize after-school excursions to different Hartford localities and suburbs in order to get a good cross section of pollution frequency and degree.	
Observing *Experimenting* *Recording* *Concluding* *Generalizing*	D. Effects of Chemicals Contained in Air Pollution Demonstrate the effect of sulphur dioxide on limestone or clam shell placed in acid solution. Student should be able to name some pollutants not recorded by the smoke test. OPTIONAL - Social studies teacher can discuss the destruction and weakening of Venetian monuments (Italy) and other old buildings and relics by chemicals contained in air pollution.		a) Page 9 Student Handbook b) HCl Acid c) Clam shells

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	E. Dirt Particles in the Air		
Experimenting *Observing* *Recording*	Have students smear Vaseline on a small piece of cardboard and place it outside. Observe the cardboard daily for three days. Ask students to record the appearance of the cardboard each day (drawing) and to list the different kind of particles found on the Vaseline.		Page 10 Handbook Vaseline Cardboard
Analyzing	Where do you think each kind of dirt came from? List possible places or things that can cause air pollution in your city.		
	OPTIONAL - Allow students to inspect the cardboard using either a magnifying glass or microscope.		
	F. Particles that Pollute our Water		
Observation *Recording*	See student handbook.		Page 10 Handbook Pan of water
	OPTIONAL - Ask students to draw the water daily and to note the increasing amounts of residue and also to note the nature of the residue.		
Forming Concepts	G. Experiment G tries to use the previous six experiments as a conceptual basis. Students perform a relatively simple experiment and, after noting some very obvious body effects of poor, stale air, try to relate this experience to pollution.		Page 11 - Handbook Paper bag

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	OPTIONAL GROUP ACTIVITIES		
Questioning Technique *Recording* *Comparing/ Contrasting* *Communication*	1. Interview - Auto Mechanic or Pollution Control Board Member This activity will give students practice in questioning and using the interview technique. Class can decide on a list of pertinent questions prior to the arrival of the visitor - questions emphasizing the effectiveness of new devices to curb automobile pollution. Follow-up Activity for a selected group of students might be to draw sketches and have written plans for other pollution control devices. Also, written critique of the value of their interview and the knowledge gained from it.		Interview
Writing Skill *Communication*	2. Letter to the Head of the Hartford Water Department. See Handbook Page 12	English class - business letter writing skills A trip to a reservoir water treatment plant can be set up here, if desired by the teacher. West Hartford and Barkhampstead are excellent sites to visit. Students would be able to observe the complete process of preparing water for consumption.	

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	3. RANGER RICK'S AIR POLLUTION		
	Ranger Rick's Nature Magazine is published by The National Wildlife Federation, Dept. #280 1412 16th St. N.W. Washington, D.C. 20036		
Reading *Explaining* *Interpreting Data* *Observing*	Editions about air pollution, water pollution and litter (terrain pollution) are available. The magazine is written at a relatively low reading level and has high interest content. Pictures, drawings and suggestive projects make this publication very worthwhile.	Magazine available through TACT Office.	Student Handbook Page 13 Ranger Rick's Air Pollution
	If the questions are too difficult, the magazine could be read as a group activity, possibly with some areas tape recorded. Questions could then be discussed as a group assignment.		

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	BUILDING AN INVERSION BOX		
Experimenting *Explaining* *Predicting* *Comparing/ Contrasting*	Building this Inversion Box will help students understand how pollutants become trapped in our atmosphere. Once the students understand the meaning of "Inversion" (through class discussion and use of the dictionary and short readings to be designed by the teacher) the box can be constructed and the activities suggested in the Conservation Manual completed. The questions included in the Student Manual aim at stressing the most pertinent but elementary facets of this activity. The follow-up letter to the Connecticut Air Conservation Committee can be used as an English (letter-writing practice) lesson.	See: A Teacher's Guide to Air Conservation, sponsored by the Talcott Mountain Science Center and The Hartford Area Tuberculosis Respiratory Disease Association. Pages 12 - 20	Listed in Student Handbook Page 15
Observing *Recording*	FILM: TAKE A DEEP BREATH 16 mm sound film - 25 minutes This film shows the problem of air pollution in a large city and the effects of pollution on Health Emphasis should be placed on health care personnel in the film.	Film available from National Medical AV-Center Film Distribution Chamblee, Georgia 30005	
	The teacher should provide the fundamentals of the respiratory system through diagrams of the system and its parts.	Milliken diagrams would be a very good source here.	

LEARNING PROCESS	ACTIVITIES	NOTES	MATERIALS
	It is suggested that students take notes during the film to be used as resource material during the rest of the unit.		
	OPTIONAL ACTIVITY		
Interviewing	Ask an Inhalation Therapist to visit the class. Prior to his/her visit, ask students to prepare an interview form. The Therapist can discuss the effects of smoking on health, and can show the students various instruments used by an inhalation therapist and other respiratory hospital people.	Contact TACT personnel for a list of prospective speakers.	Inhalation Therapist